

Conveyance System Improvements

The RWSP calls for improvements to King County's conveyance system to meet the 20-year design storm standard and accommodate projected increases in flows.

In 1999, the conveyance system improvement (CSI) program began by developing a system to identify and prioritize ten planning areas, or basins in the wastewater service area. Regional conveyance system improvement planning was completed in 2003 for each of the basins. This initial work culminated in the 2003 regional conveyance system plan. The plan identified improvements that would help the system meet projected capacity demands based on wastewater flow, infiltration and inflow (I/I), and urban growth projections made at the time. Since 2003, new flow monitoring and modeling information was developed with the assistance of the local agencies that contribute wastewater flows to King County's regional system.¹ This information provides a more accurate basis for projecting future flow and capacity demands. In 2005, planning, design, and construction work continued on a number of conveyance projects.

This chapter provides an overview of CSI accomplishments in 2005 and describes projects that were in design and construction in 2005. The last section of the chapter presents CSI schedule information for 2006.

3.1 Overview of 2005 Accomplishments

In 2005, the Wastewater Treatment Division (WTD) began to update its regional CSI plan. The process and timeline for completing the update are shown in Figure 3-1. The update will identify improvements to address capacity-constraint and condition-based needs in conveyance system components and will provide updated cost estimates for identified improvements through 2030.

In December 2005, a technical memorandum identified the projected capacity needs through 2050.² This information provides the basis for working with the local agencies to complete the planning tasks outlined in Figure 3-1 by the end of 2006. The technical memorandum is available on the CSI Web site at <http://dnr.metrokc.gov/wtd/csi/csi-docs/RegionalConveySysNeeds/>

The inclusion of condition-based needs is a new component of CSI planning. It was added to provide a more complete picture of the long-term capital needs for the conveyance system. The CSI program is coordinating with WTD's Asset Management program on this component.

¹ The new flow monitoring and modeling information was developed as part of the I/I control program (discussed in Chapter 4 of this report).

² 2050 is the projected date when the regional wastewater service area will be fully built out and all portions of the service area will be connected into the wastewater treatment system.

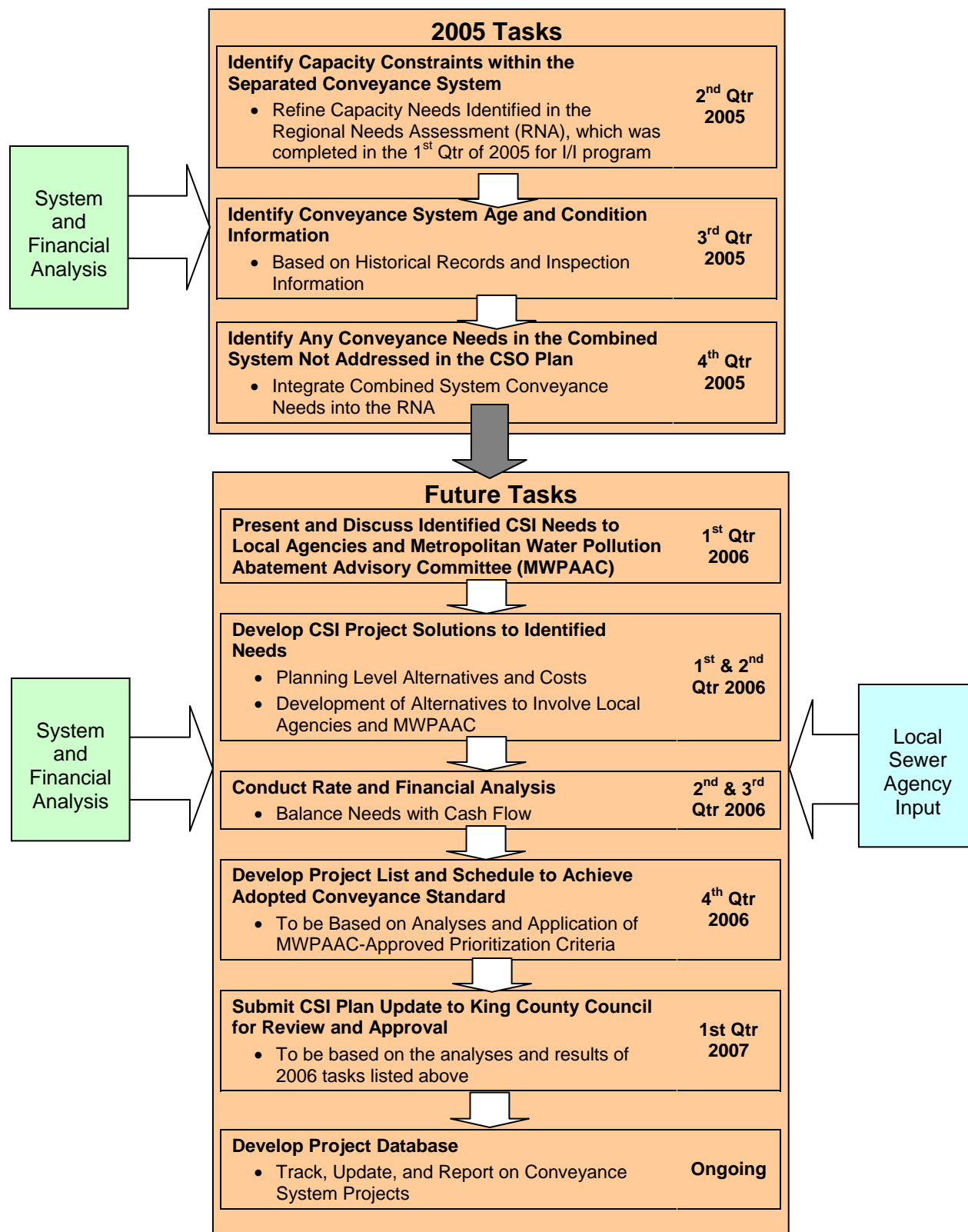


Figure 3-1. Process and Timeline to Update the Regional Conveyance System Improvement Plan

3.2 Projects in Design and Construction

The RWSP CSI projects in design during 2005 include the Bellevue Pump Station Upgrade, Kent/Auburn Conveyance System Improvements, Hidden Lake Pump Station Replacement and Sewer Improvement, and Soos Creek Improvements. The CSI projects in construction during 2005 include the Fairwood Interceptor Sewer, Juanita Bay Pump Station Replacement, and Pacific Pump Station Replacement. The locations of these projects are shown in Figure 3-2.

3.2.1 Bellevue Pump Station Upgrade

The Bellevue Pump Station pumps about 8 million gallons per day (mgd) of wastewater from west Bellevue to the Swayolocken Pump Station near the Mercer Slough. From there, the wastewater flows to the county's South Treatment Plant in Renton. This project will increase the Bellevue Pump Station's capacity to 11 mgd to meet projected flows in the future and will improve the station's electrical and control systems.

The pump station improvements include new pumps; new electrical, mechanical, and odor control equipment; a new standby generator; new aboveground facilities to house the new equipment; and better access for maintenance vehicles and workers. In addition to these improvements, a new 5,500-foot-long, 24-inch-diameter force main will be constructed to convey the added flows directly from the upgraded Bellevue Pump Station to the East Side Interceptor. Because of space constraints, the Swayolocken Pump Station cannot be upgraded to handle these additional flows.

The environmental review and predesign for the project are complete. Final design began in September 2005; the project's facility plan was approved in December 2005.

Visit the project Web site for more information: <http://dnr.metrokc.gov/wtd/projects/bellevue/>

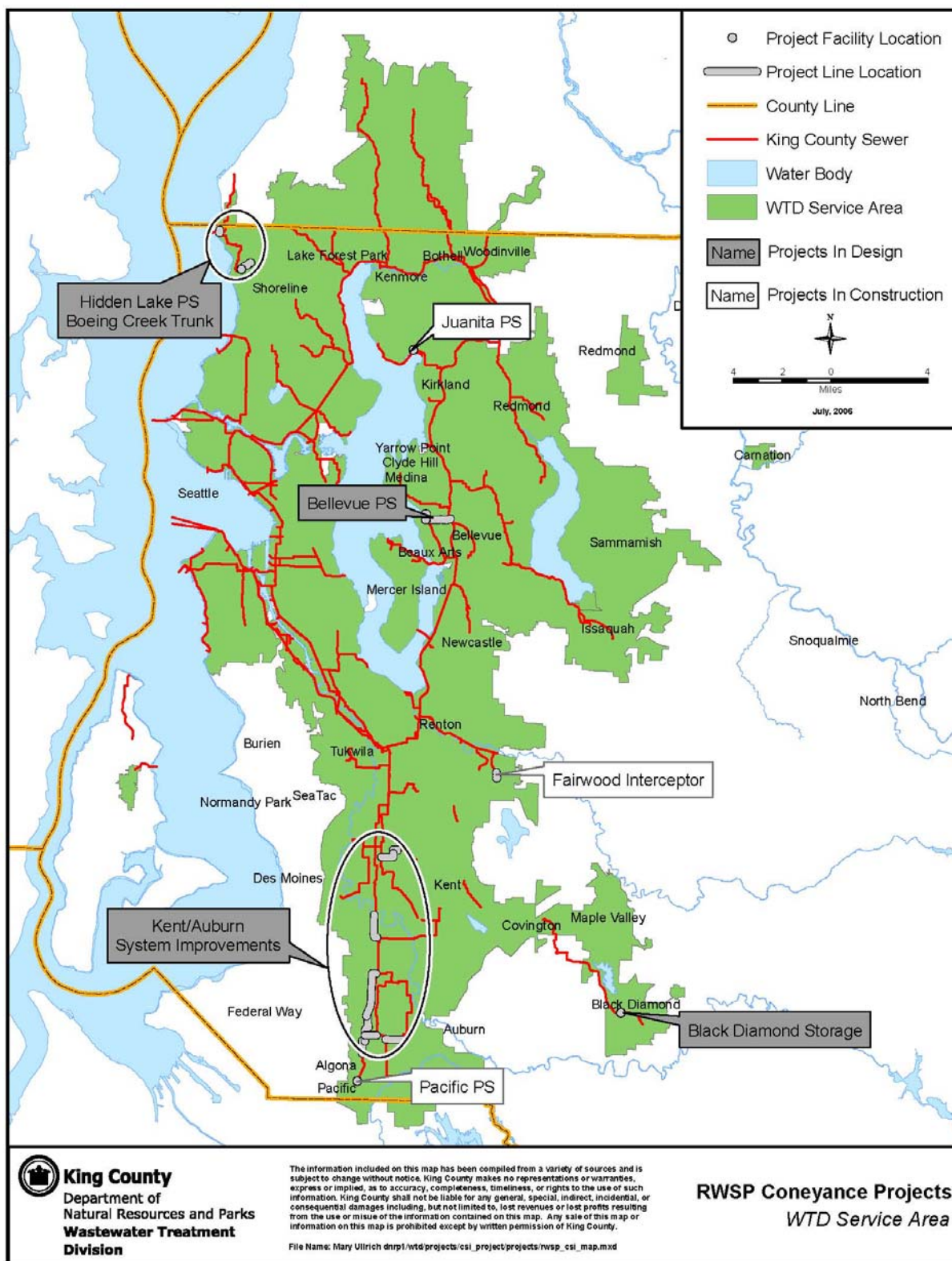


Figure 3-2. RWSP Conveyance Projects in Design and Construction in 2005

3.2.2 Kent/Auburn Conveyance System Improvements (Southwest Interceptor)

The Kent/Auburn Conveyance System Improvements project will provide additional capacity needed in Kent, Auburn, and Algona. To meet these needs, the county is looking at constructing approximately 6 miles of new pipe, ranging from 30- to 54-inch-diameter, or constructing a combination of new pipes and storage facilities.

This project was formerly known as the Southwest Interceptor project, which proposed to meet the capacity needs in the Kent and Auburn planning areas by rerouting flows to a new large-diameter sewer located primarily in the West Valley Highway right-of-way. As a result of information gathered during the I/I control study, the planning analyses were revisited. It was determined that the capacity needs could be met more cost effectively by constructing some capital projects in 2010 and others in 2020. The Kent/Auburn Conveyance System Improvement project will meet the 2010 capital project needs.

In addition to evaluation of storage options, the project will evaluate design of two sewer lines in the Auburn area:

- **Auburn West Valley Parallel Interceptor.** Located in Algona and Auburn, this new pipeline would run north and add capacity to relieve the Algona Pacific Trunk, Auburn West Valley Interceptor, and Auburn West Interceptors.
- **Construction of the Stuck River Trunk.** Located in Auburn, this pipeline would convey flow away from the M-Street Trunk to the new Auburn West Valley parallel interceptor.

The project will focus on design of one new sewer line in Kent:

- **Mill Creek Relief Sewer.** This sewer line will be designed to divert some flow out of the Mill Creek Interceptor and convey it west to the Auburn Interceptor.

Predesign is expected to be complete in 2007. During predesign, it is possible that modifications will be made to these project elements.

3.2.3 Hidden Lake Pump Station Replacement and Sewer Improvement

The 40-year-old Hidden Lake Pump Station does not have capacity to handle existing or future peak storm flows, nor does it meet current design standards for odor control, instrumentation, space, and equipment handling. Further, the pump station discharges to the Boeing Creek Trunk, which has a history of capacity, odor, and corrosion problems. This project will address these problems through phased improvements to control overflows and increase the capacity of the Boeing Creek Trunk to handle the 20-year storm.

The capacity improvements include construction of a new Hidden Lake Pump Station on the site of the existing pump station. The new station will have a capacity of 5.5 mgd and a future peak capacity of 6.8 mgd. Other capacity improvements include a 0.5 million gallon storage facility

constructed upstream of the pump station and replacement of approximately 12,000 linear feet of pipeline. Future I/I reduction has the potential to reduce the size or need for additional facilities.

Project staff worked closely with the surrounding community in 2005 to keep community members informed about the project and respond to their questions and concerns. In October, King County and the City of Shoreline hosted an on-site tour for community members to learn more about the project. The county obtained the necessary construction permits from the City of Shoreline in December 2005 and completed the project design. The county advertised the project for construction in January 2006.

Visit the project Web site for more information:

<http://dnr.metrokc.gov/wtd/projects/hiddenlake.htm>

3.2.4 Soos Creek Sewer Improvements

In 2002, King County signed an agreement with the Soos Creek Water and Sewer District, committing to build and operate three pump stations and 10 miles of sewer to meet the long-term needs of this rapidly growing area. A preferred location for Pump Station D (now called the Covington Pump Station) was identified and the predesign report for the pump station and pipeline was completed in June 2005.

When the estimated cost of the Covington Pump Station and pipeline turned out to be significantly higher than anticipated, WTD explored alternative options for phasing system improvements. This analysis determined that the most critical short-term capacity need is in Black Diamond. The revised plan will address that need by constructing a wastewater storage facility in Black Diamond by 2010 and delay the start of design for the Covington Pump Station and pipeline until 2015. The anticipated completion date for the pump station is 2020. Planning for the Black Diamond storage facility will start in 2006.

WTD plans to build additional pump stations and pipelines between Black Diamond and Kent by the year 2020. To ensure that these facilities will be in place when needed, WTD will continue to work with the Soos Creek Water and Sewer District and monitor system flows.

Visit the project Web site for more information: <http://dnr.metrokc.gov/wtd/projects/sooscreek/>

3.2.5 Fairwood Interceptor Sewer

Wastewater flows from the Fairwood community through a pipeline in the Madsen Creek ravine. The pipeline is unstable and located in a sensitive area prone to landslides and erosion. The project will redirect flow to the new Fairwood Interceptor and upsize existing Cedar River Water and Sewer District pipelines. In accordance with community preference, the new deep gravity interceptor avoids the need to build a pump station in Fairwood.

To complete the final phase of work, King County will build new pipes to connect portions of pipe laid earlier in the project. Construction on the final phase began in June 2005 and is scheduled to be complete in October 2006.

Throughout 2005, project staff have been working closely with the project's affected neighbors and surrounding community to keep them informed about construction impacts and respond to their questions and concerns.

Visit the project Web site for more information: <http://dnr.metrokc.gov/wtd/projects/fairwood/>

3.2.6 Juanita Bay Pump Station Replacement

The existing 14.2-mgd Juanita Bay Pump Station is an aging facility that is experiencing significant operational difficulties in conveying existing flows and that has insufficient capacity to convey future flows. To meet flow demands projected through 2050, a 30.6-mgd pump station is being built across the street to replace the existing station. In addition to increased capacity, the new pump station will include features to improve safety and reliability, such as a standby generator, odor and corrosion prevention systems, improved access for maintenance vehicles and workers, and equipment lifting devices.

In early 2005, final design was completed, construction permits and property rights-of-entry were obtained, and the pump station construction contract was awarded. A construction notice to proceed was issued in August, and a neighborhood meeting and site tour were held at the new pump station site before construction broke ground. In late 2005, a temporary site dewatering system and underground utilities were installed and structural concrete secant pile construction began. Project staff worked closely with the affected neighbors and surrounding community to keep them informed about construction impacts and to respond to their questions and concerns.

Plans for 2006 include continued construction of the belowground portion of the pump station and microtunneling of a 60-inch-diameter influent sewer under NE Juanita Drive. Project construction is expected to be complete in 2008.

Visit the project Web site for more information: <http://dnr.metrokc.gov/wtd/projects/juanita/>

3.2.7 Pacific Pump Station Replacement

The existing 1.6-mgd Pacific Pump Station has insufficient capacity to convey existing and projected future peak flows. To meet flow demands through 2030, a new 3.3-mgd pump station will be constructed in an industrial zone site two blocks west of the existing station. The new pump station will have features such as standby power, odor control, reliable and safe access for operational and maintenance staff, and equipment lifting devices. Project construction is scheduled to be complete by the end of 2006.

Visit the project Web site for more information: <http://dnr.metrokc.gov/wtd/projects/pacific/>

3.3 Schedule for 2006

CSI activities scheduled for 2006 are as follows:

- The CSI project team will continue to work on the regional CSI plan update; the update is expected to be transmitted to the Metropolitan King County Council in early 2007.
- Construction on the Bellevue Pump Station is anticipated to begin in late 2006.
- Predesign activities will take place on the Kent/Auburn Conveyance System Improvements project in 2006; predesign is expected to be complete in May 2007.
- Construction on the Hidden Lake Pump Station Replacement and Sewer Improvement project is expected to begin in summer 2006 and be complete in spring 2009.
- Construction on the Fairwood Interceptor Sewer project is scheduled to be complete in October 2006.
- Construction on the belowground portion of the Juanita Bay Pump Station will continue in 2006; the project is expected to be complete in 2008.
- Construction on the Pacific Pump Station is expected to be complete in summer 2006.